

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Fumihiko Kobayashi et al.

Divisional of Serial No.: 10/067,553

For: **OPTICAL SEMICONDUCTOR  
DEVICE AND METHOD OF  
FABRICATING THE SAME**

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents  
P.O. Box 1450  
Arlington, VA 22313-1450

Dear Sir:

In accordance with 37 CFR 1.56, Applicant hereby discloses the prior art references that have been submitted and/or cited in the following related applications/patents:

Serial No.	Filing Date	Patent No.	Issue Date
10/067,553	February 4, 2002	---	---
09/027,012	February 18, 1998	6,430,986	June 11, 2002
08/534,333	September 27, 1995	5,783,844	July 21, 1998

Forms PTO-1449 (modified), PTO-1449 and PTO0892 are enclosed herewith. Copies of the references are not provided as permitted by 37 CFR 1.98(d).

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

Date: 8/20/03

By: 

Eric S. Hyman Reg. No. 30,139

ESH:kla

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JAN 25 2001  
TRADEMARK OFFICE

Form PTO-1449 (Modified)	Atty Docket No. 96790P197D	Application No. 09/027,012
List of Patents & Publications Statement	Applicant(s): F. Kobayashi	
(Use several sheets if necessary)	Filing Date: February 20, 1998	Group No.: 2815

### U.S. PATENT DOCUMENTS

Exam. Initials		Document Number	Date	Name	Class	Sub-class	Filing Date (if appropriate)
<i>[Signature]</i>	AA	5104824	04/14/1992	Clausen Jr., et al.	437	90	
	AB	5094973	03/10/1992	Pang	437	67	
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### FOREIGN PATENT DOCUMENTS

Exam. Initials		Document Number	Date	Country	Class	Sub-class	Translation Yes	No
<i>[Signature]</i>	AL	EP 0 588 747 A2	23/03/1994	Europe	H01L 21	76	X	
	AM							
	AN							
	AO							
	AP							
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### OTHER ART (Including Title, Author, Date, Pertinent Pages, etc.)

Exam. Initials		Document Identification
<i>[Signature]</i>	AR	Patent Abstracts of Japan, vol. 17, no. 174, April 5, 1993
<i>[Signature]</i>	AS	Patent Abstracts of Japan, vol. 16, no. 390, August 19, 1992
	AT	

Examiner: *[Signature]* Date Considered: 3/01

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication

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PTO/SB/08A (08-00)

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U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Substitute for Form 1449A/PTO

**Complete if Known**

Application Number

09/027,012

**Filing Date**

**02/18/98**

First Named Inventor

**Kobayashi**

### Group Art Unit

2815

**Examiner Name**

**Jerome Jackson Jr.**

Attorney Docket Number

96790.P/197D

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

**OCT 09 2000**


(use as many sheets as necessary)

1 of

**U.S. PATENT DOCUMENTS**

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## FOREIGN PATENT DOCUMENTS

Exam. Initials	Cite No.	Document Number	Name of Patentee or Applicant of Cited Document	Date of Publication or Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>2</sup>
		01175792 A	NEC Corp	7-12-89		
		63227087 A	Fujitsu Ltd.	9/21/88		
		02098985 A	Mitsubishi Electric Corp	4-11-90		
		02022880 A	Fujitsu Ltd	1-25-90		
		63046789 A	NEC Corp	2-27-88		
		03012984 A	Nippon Telegr & Teleph Corp	1-21-91		

**Examiner  
Signature**

Date Considered

~~10/01~~

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<sup>1</sup>Unique citation designation number. <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

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**Complete if Known**

**Application Number**

**09/027,012**

**Filing Date**

02/18/98

**First Named Inventor**

## Kobayashi

### Group Art Unit

2815

**Examiner Name**

**Jerome Jackson Jr.**

Attorney Docket Number

96790.P197D

**Exam  
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7-27-89

04127148 A

**Hitachi Ltd Hitachi VLSI Eng Corp**

4-28-92

**04330765 A**

**Hitachi Ltd. Hitachi Haramachi  
Semiconductor Ltd.**

**11-18-92**

**Examiner  
Signature**

**Date  
Considered**

**\*EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



01/13/97

Form PTO-1449 (Modified)	Atty Docket No. 96790.P197	Serial No. 08/534,333
List of Patents & Publications Statement	Applicant(s): Fuhihiko Kobayashi et al.	
(Use several sheets if necessary)	Filing Date: September 27, 1995	Group No.:

## U.S. PATENT DOCUMENTS

Exam. Initials		Document Number	Date	Name	Class	Sub-class	Filing Date (if appropriate)
<i>ML</i>	AA	5,104,824	4/14/92	CLAUSEN, JR. et al.	437	90	
<i>ML</i>	AB	3,425,879	2/4/69	D.W. SHAW et al.	148	175	
	AC						
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## FOREIGN PATENT DOCUMENTS

Exam. Initials		Document Number	Date	Country	Class	Sub-class	Translation Yes	No
<i>ML</i>	AL	EPA0261408	8/21/87	EUROPE	H01S	19	X	
	AM							
	AN							
	AO							
	AP							
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## OTHER ART (Including Title, Author, Date, Pertinent Pages, etc.)

Exam. Initials		Document Identification
<i>ML</i>	AR	PATENT ABSTRACTS OF JAPAN, vol. 10, no. 186, June 28, 1986 & JPA61032587
<i>ML</i>	AS	PATENT ABSTRACTS OF JAPAN, vol. 7, no. 154, July 6, 1958 & JP58064086
<i>ML</i>	AT	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, pages 48-50

Examiner: *M. Kelley*Date Considered: *5/97*

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Form PTO-1449 (Modified)	Atty Docket No. 96790.p197	Serial No. 08/534,333
List of Patents & Publications Statement 21 38	Applicant(s): FUMIHIKO KOBAYASHI et al.	
(Use several sheets if necessary)	Filing Date: 9/27/95	Group No.: 1109

# U.S. PATENT DOCUMENTS

Exam. Initials		Document Number	Date	Name	Class	Sub-class	Filing Date (if appropriate)
ML	AA	5,094,973	3/10/92	PANG	437	67	
	AB						
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	AG						
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	AI						
	AJ						
	AK						

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# FOREIGN PATENT DOCUMENTS

Exam. Initials		Document Number	Date	Country	Class	Sub-class	Translation Yes	No
ML	AL	EP-0 588 747 A2	8/24/93	EUROPE	H01L	76	X	
	AM							
	AN							
	AO							
	AP							
	AQ							

# OTHER ART (Including Title, Author, Date, Pertinent Pages, etc.)

Exam. Initials		Document Identification
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Examiner: M. Keller Date Considered: 5/97

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication

FORM PTO-1449  
(REV. 7-80)

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PATENT AND TRADEMARK OFFICE

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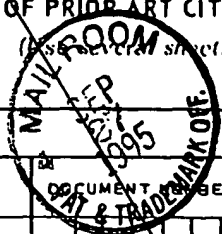
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U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
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AG						
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FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
AL	KOKAI 63-311111	Feb. 9, 1988	Japan	-	-	
AM	KOKAI 63-287014	Nov. 24, 1988	Japan	-	-	
AN	KOKAI 63-311786	Dec. 20, 1988	Japan	-	-	
AO	KOKAI 1-175727	July 12, 1989	Japan	-	-	
AP						

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AR	"Digital Signal Regeneration with Side-Injection-Light-Controlled Bistable Laser Diode as a Wavelength Converter" by K. Nonaka, et al. IEEE PHOTONICS TECHNOLOGY LETTERS, Vol. 7, No. 1, January 1995, pp. 29-31
AS	"VERY RAPID AND SELECTIVE EPITAXY OF InP AROUND MESAS OF HEIGHT UP TO 14 $\mu$ m BY HYDRIDE VAPOUR PHASE EPITAXY" by S. Lourdudoss, et al. 6th Int. Conf. on Indium Phosphide and Related Materials, Santa Barbara, (1994) pp. 615-618
AT	"PLANAR SURFACE BURIED-HETEROSTRUCTURE InGaAsP/InP LASERS WITH HYDRIDE VPE-GROWN Fe-DOPED HIGHLY RESISTIVE CURRENT-BLOCKING LAYERS" by S. Sugou, et al. ELECTRONICS LETTERS 6th November 1986 Vol. 22 No. 23 pp. 1214-1215

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8/534,333

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## NOTICE OF REFERENCES CITED

APPLICANT(S)

Kobayashi et al.

## U.S. PATENT DOCUMENTS

	DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
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## FOREIGN PATENT DOCUMENTS

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## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

Kirby et al., "Regrowth of Semi-Insulating Iron doped In P...,"

J. Appl. Phys. 41, 12, 1246-50 (1970)



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